

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the present amendments and following discussion, is respectfully requested.

Claims 1-20 and 22 are pending. Claims 1, 14, 17, and 22 are amended. Claim 21 is canceled without prejudice or disclaimer. Support for the amendments to Claims 1, 14, and 22 can be found in Fig. 5, which shows direct application of the laser beam, for example. Support for the amendment to Claim 17 is self-evident. No new matter is added.

In the outstanding Office Action, Claims 1, 2, 4-6, 8, 9, 11, 14, 16, and 18-22 were rejected as anticipated by Buldhaupt (U.S. Patent No. 5,994,666, herein "Buldhaupt '666")

Claims 3, 10, and 13 were rejected under 35 U.S.C. §103(a) as obvious over Buldhaupt '666 in view of Sanders (U.S. Patent Pub. 2002/0179688) in view of Weisert et al. (U.S. Patent No. 4,220,276, herein "Weisert").

Regarding the rejection of Claims 1, 2, 4-6, 8, 9, 11, 14, 16, and 18-22 as anticipated by Buldhaupt '666, that rejection is respectfully traversed by the present response.

Amended independent Claim 1 recites, in part:

b) providing an anti-diffusion substance and depositing said anti-diffusion substance in a predefined pattern on at least one face of said two faces of said primary parts;

c) **stacking-up** and assembling said primary parts together at their said periphery, with the exception of a passage-forming location, **said primary parts forming a stack** and defining between them a cavity, said at least one face being placed facing into said cavity...

wherein step b) is performed in application of the following sequence of operations:

b1) applying a layer of anti-diffusion substance comprising a powder over the entire surface of said at least one face of the primary parts;

b2) localized sintering of the anti-diffusion substance, without melting the powder, in said predefined pattern by the heating that results from localized **application of a laser beam directly onto said powder along a track made up of at least one zone prior to the stacking-up**, thereby producing, in said at least one zone, both bonds between the particles of powder and also a diffusion phenomenon between the particles of powder and the material of said at least one face of the primary part.

Accordingly, the laser beam is directly applied to the powder. The laser beam is applied prior to the stacking-up of the primary parts into a stack.

In contrast, Buldhaupt '666 requires application of the laser beam after stacking of the sheets. Buldhaupt '666 states:

The coated sheet is aligned with and abutted against the other sheet, with the boron nitride coated face facing the other sheet. **The two core sheets 44 and 46 are laser welded in the pattern shown in FIG. 4** on a laser welding apparatus shown in FIGS. 6A and 6B, purchased from Convergent Energy Corp. in Sturbridge, Mass. The apparatus 59 includes a CNC motion control table 60 on which the sheets 44 and 46 are placed and secured in an aligned stack. A vertically movable plunger is mounted over the table 60. The plunger has a fitting on which a pressure trolley 62, shown in more detail in FIGS. 7 and 8, is mounted for **exerting a vertical force on the sheets to press them into intimate contact during laser welding by a laser beam** aimed vertically downward through the center of the trolley 62 at the table.¹

As stated above, Buldhaupt '666 welds sheets (44) and (46) with the laser. The sheets (44) and (46) are welded after stacking. Buldhaupt '666 states:

stacking two or more sheets to be laser welded in a vertical stack and **pressing said sheets into intimate contact at a point at which laser welding is to be initiated;**

focusing a high power laser beam on or slightly above the surface of the top sheet in said stack at a beginning point of a stitch weld;

energizing said laser to produce a powerful beam of light, and holding said beam stationary on said beginning point for a first short dwell period to melt a small puddle of metal at said point and create thereby a bulbous node at the beginning of said weld.²

Buldhaupt '666 fails teach or suggest that the laser beam is directly applied to the powder or that the laser beam is applied prior to the stacking-up of the primary parts into a stack.

Rather, Buldhaupt '666 uses its laser beam to weld sheets of metal together. The sheets of metal must be placed on top of one another for this to happen, and the laser is not applied to the sheets before stacking. Nor does Buldhaupt '666 apply a laser directly to a powder as recited in amended independent Claim 1. Accordingly, Applicants respectfully submit that

¹ Buldhaupt '666, col. 6, lines 53-67 (emphasis added).

² Buldhaupt '666, claim 1 (emphasis added).

amended independent Claim 1 and the claims depending therefrom patentably distinguish over Buldhaupt '666 for at least the reasons discussed above.³

Amended independent Claims 14 and 22 recite substantially similar features as those discussed above regarding amended independent Claim 1 and patentably distinguish over Buldhaupt '666 for at least the same reasons.

Regarding the rejection of dependent Claims 3, 10, and 13 as obvious over Buldhaupt '666 in view of Sanders and Weisert, that rejection is respectfully traversed by the present response.

Claims 3, 10, and 13 each depend from amended independent Claim 1 and patentably distinguish over Buldhaupt '666 for at least the same reasons as amended independent Claim 1 does.

The outstanding Office Action relies on Sanders and Weisert for specific materials used in the anti-diffusion substance or for the particle size of the anti-diffusion substance.⁴

However, Applicants respectfully submit that neither of Sanders and Weisert teaches or suggests applying a laser beam directly to an anti-diffusion powder or that the laser beam is applied prior to the stacking-up of primary parts into a stack.

Accordingly, Applicants respectfully submit that dependent Claims 3, 10, and 13 each patentably distinguish over any proper combination of Buldhaupt '666, Sanders, and Weisert for at least the above-discussed reasons.

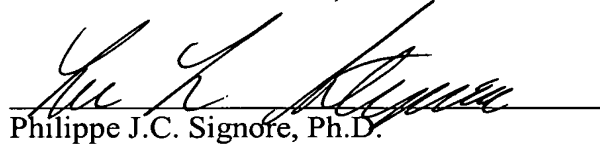
³ The previously cited Buldhaupt reference, (U.S. Patent No. 6,419,146) suffers from the same deficiencies as Buldhaupt '666 inasmuch as the laser is applied to weld the sheets after stacking up, see 6,419,146, col. 5, lines 40-42.)

⁴ Outstanding Office Action, page 5.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Philippe J.C. Signore, Ph.D.
Attorney of Record
Registration No. 43,922

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 03/06)

Lee L. Stepina
Registration No. 56,837